

FIG. 1A Prior Art

10 Processing Element	59 Received Data
20 Transmitter	60 Modulator
30 Processing Unit	90 Wavelength Addressed Receiver
40 Tunable Laser	E Electronic Data to be Transmitted
50 Data Packet	$\lambda$ Wavelength Designation

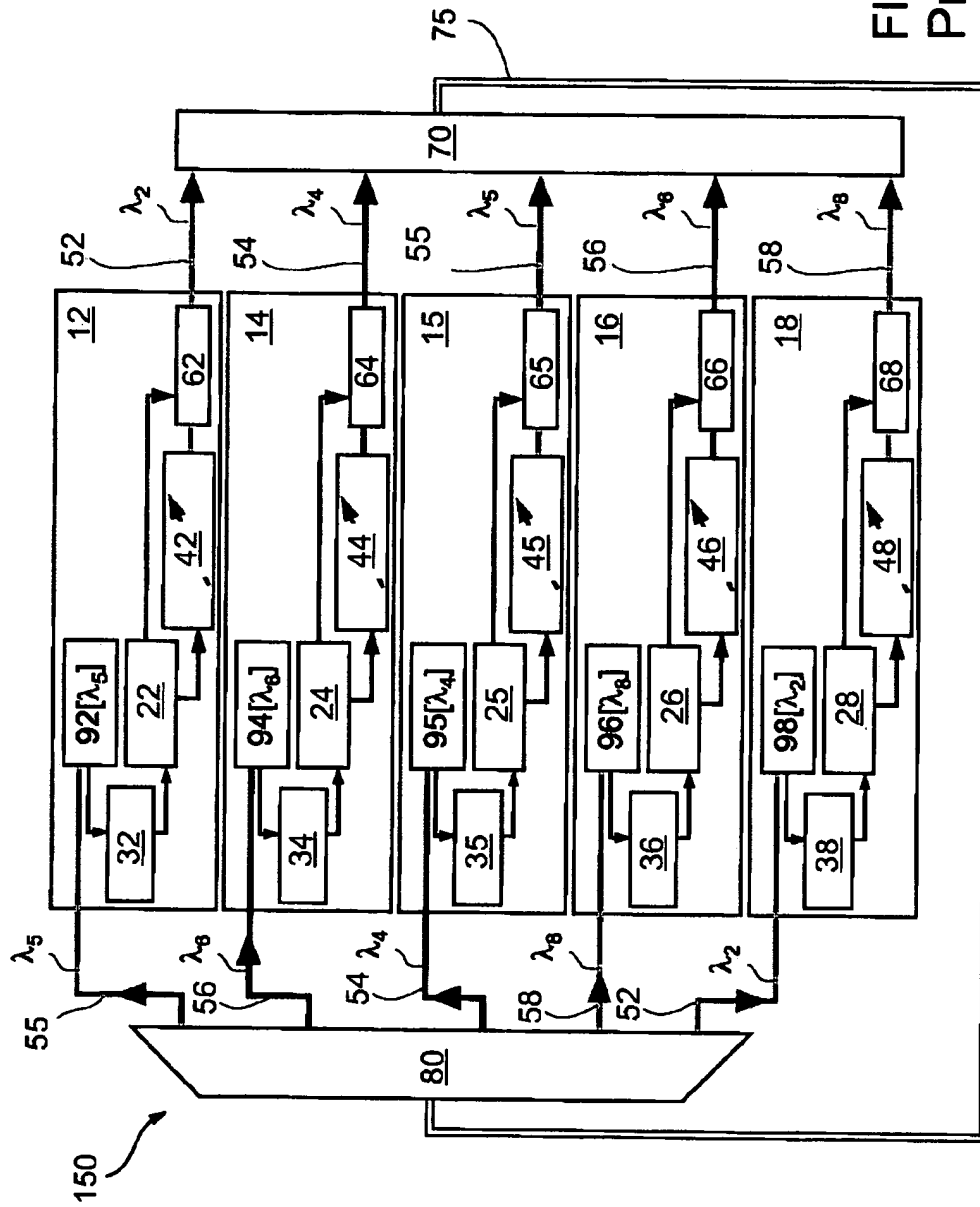


FIG. 1B  
 Prior Art

12, 14, 15, 16, 18	Processing Elements (PE)	70	Optical Coupler
22, 24, 25, 26, 28	Transmitters	75	Optical Fiber
32, 34, 35, 36, 38	Processing Units	80	Optical Wavelength Demultiplexer
42, 44, 45, 46, 48	Tunable Lasers	92, 94, 95, 96, 98	Wavelength Addressed Receiver
52, 54, 55, 56, 58	Data Packets	150	Data Network
62, 64, 65, 66, 68	Modulators	λ	Wavelength Designation

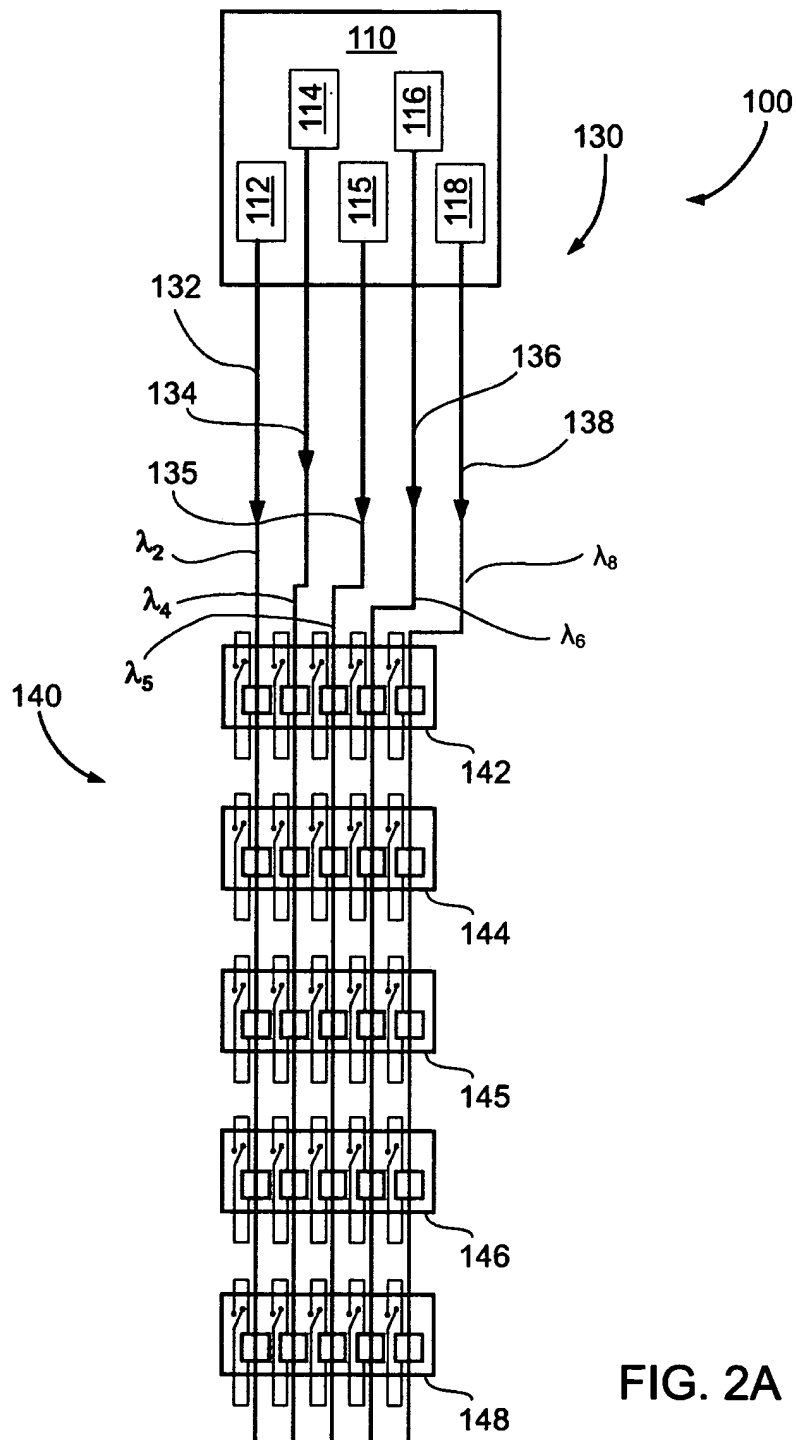


FIG. 2A

100 Laser Power Grid	140 Optical Switching Network
110 Laser Power Supply	132, 134, 135, 136, 138 Optical Fibers
112, 114, 115, 116, 118 Laser Sources	142, 144, 145, 146, 148 Optical Switch Arrays
130 Laser Distribution Grid	$\lambda$ Wavelength Designation

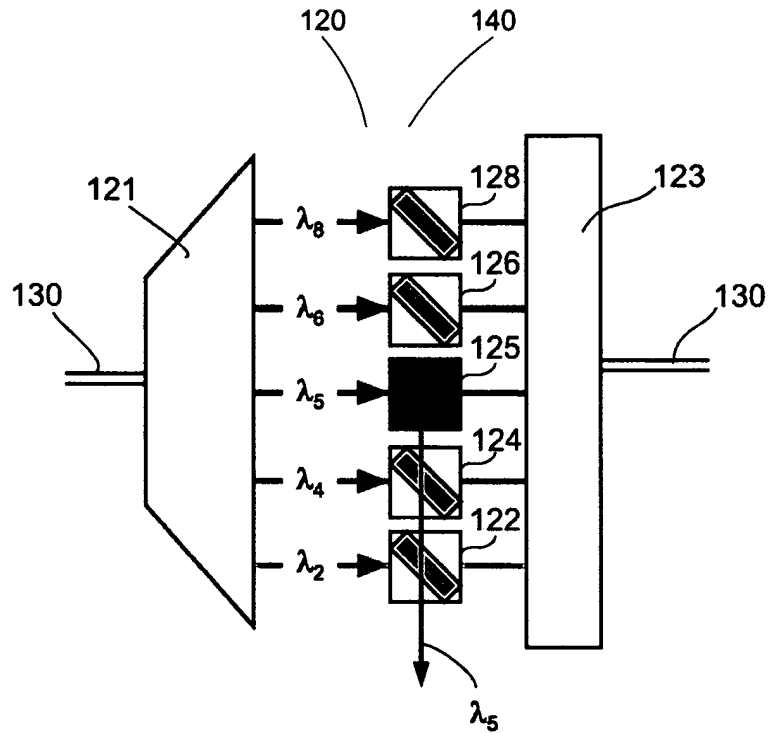
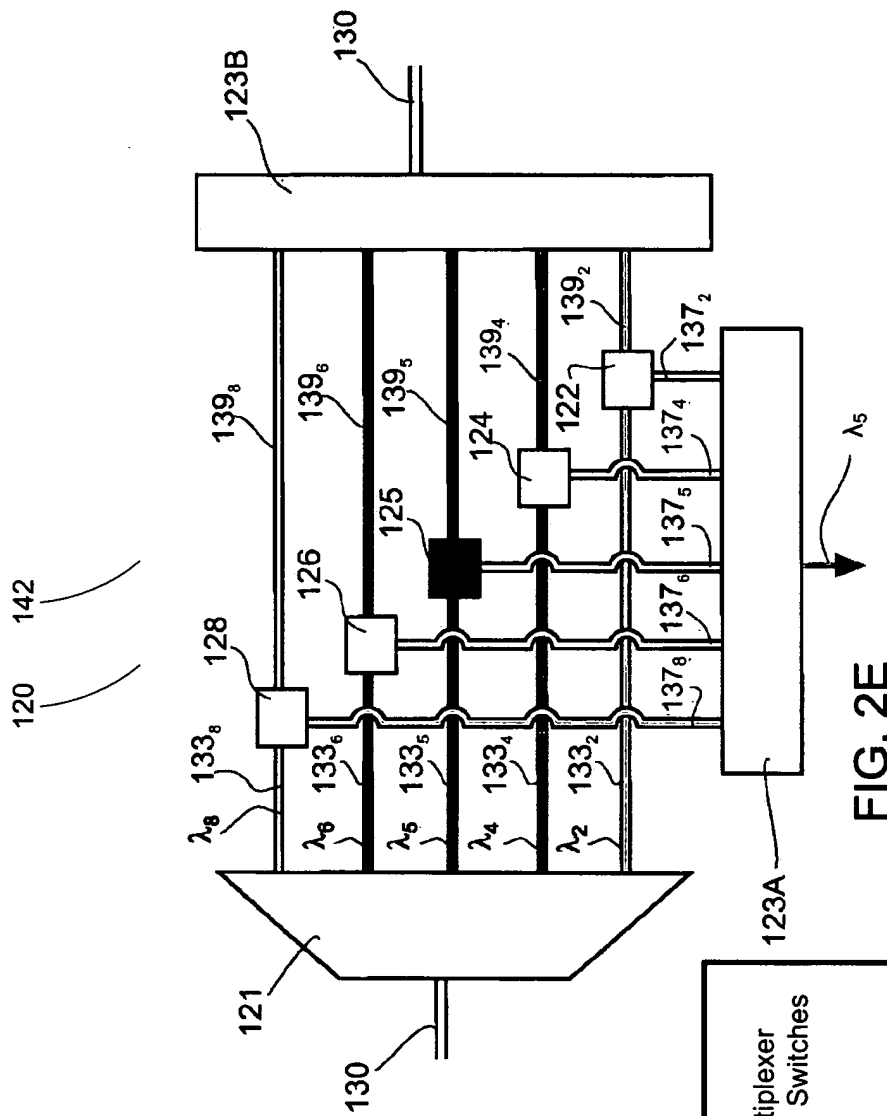


FIG. 2D

120 Optical Switch Array  
121 Optical Wavelength Demultiplexer  
122, 124, 125, 126, 128 Optical Switches  
123 Coupler  
130 Optical Fiber  
142 Optical Switch Array  
 $\lambda$  Wavelength Designation



- 120 Optical Switch Array
- 121 Optical Wavelength Demultiplexer
- 122, 124, 125, 126, 128 Optical Switches
- 123A, 123B Optical Couplers
- 130 Optical Fiber
- 133 Input Optical Fiber
- 137 Output Optical Fiber
- 139 Output Optical Fiber
- 142 Optical Switch Array
- $\lambda$  Wavelength Designation

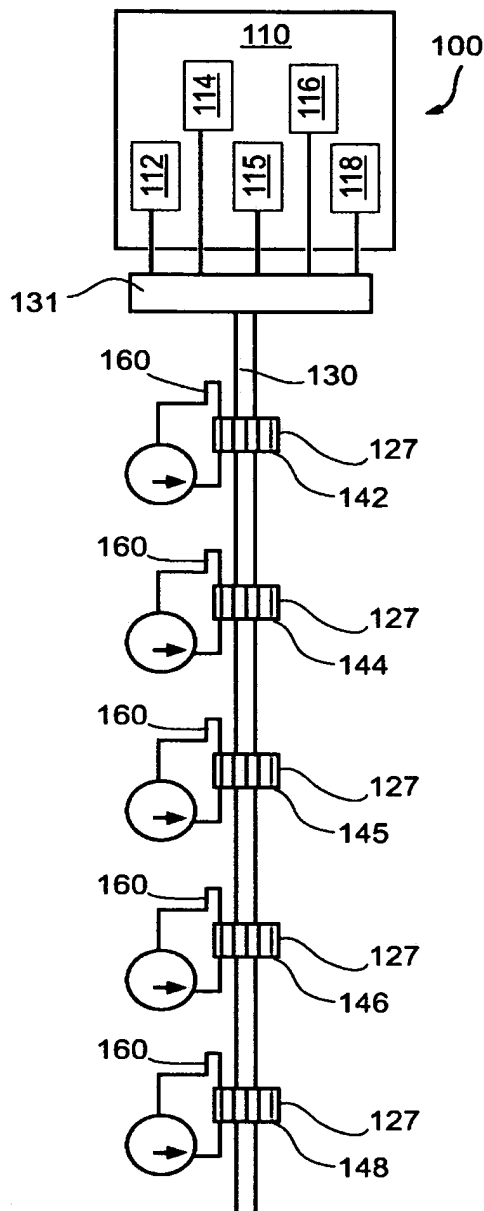


FIG. 2F

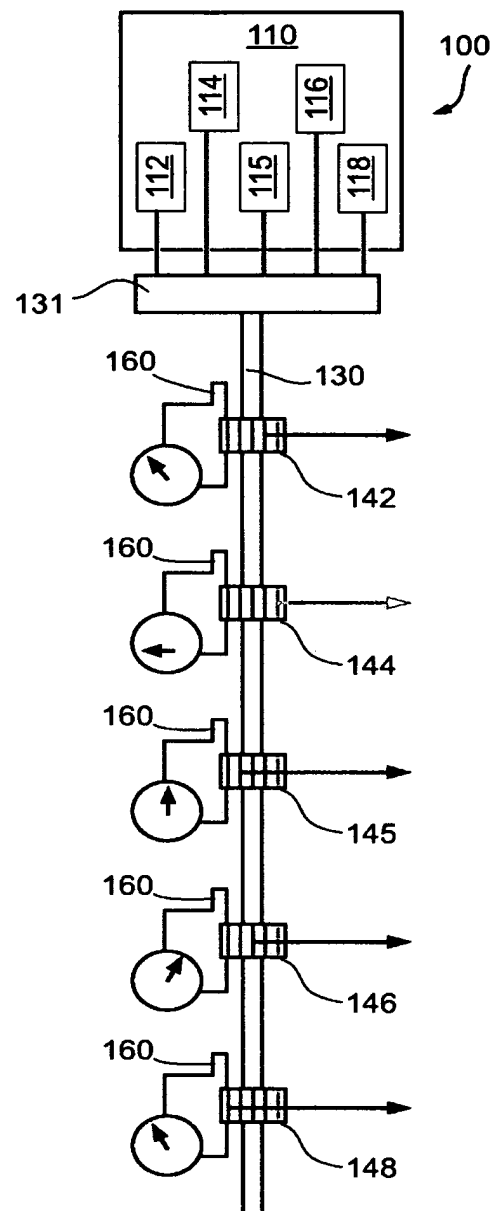


FIG. 2G

110 Laser Power Supply Station  
 112, 114, 115, 116, 118 Continuous Wave (CW) Laser Sources  
 127 Electrohalographic Switch  
 130 Optical Fiber  
 131 Optical Coupler  
 142, 144, 145, 146, 148 Optical Switches  
 160 Variable Electric Source  
 $\lambda$  Wavelength Designation

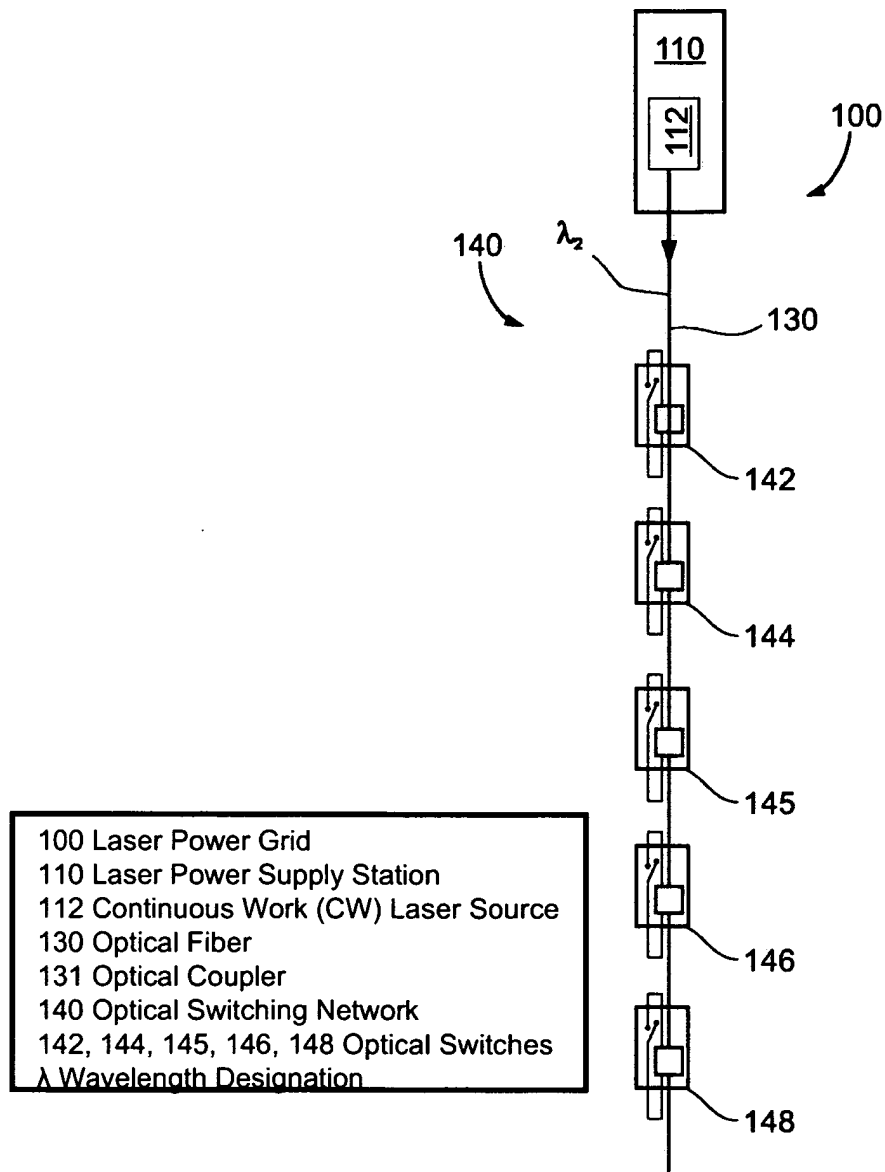
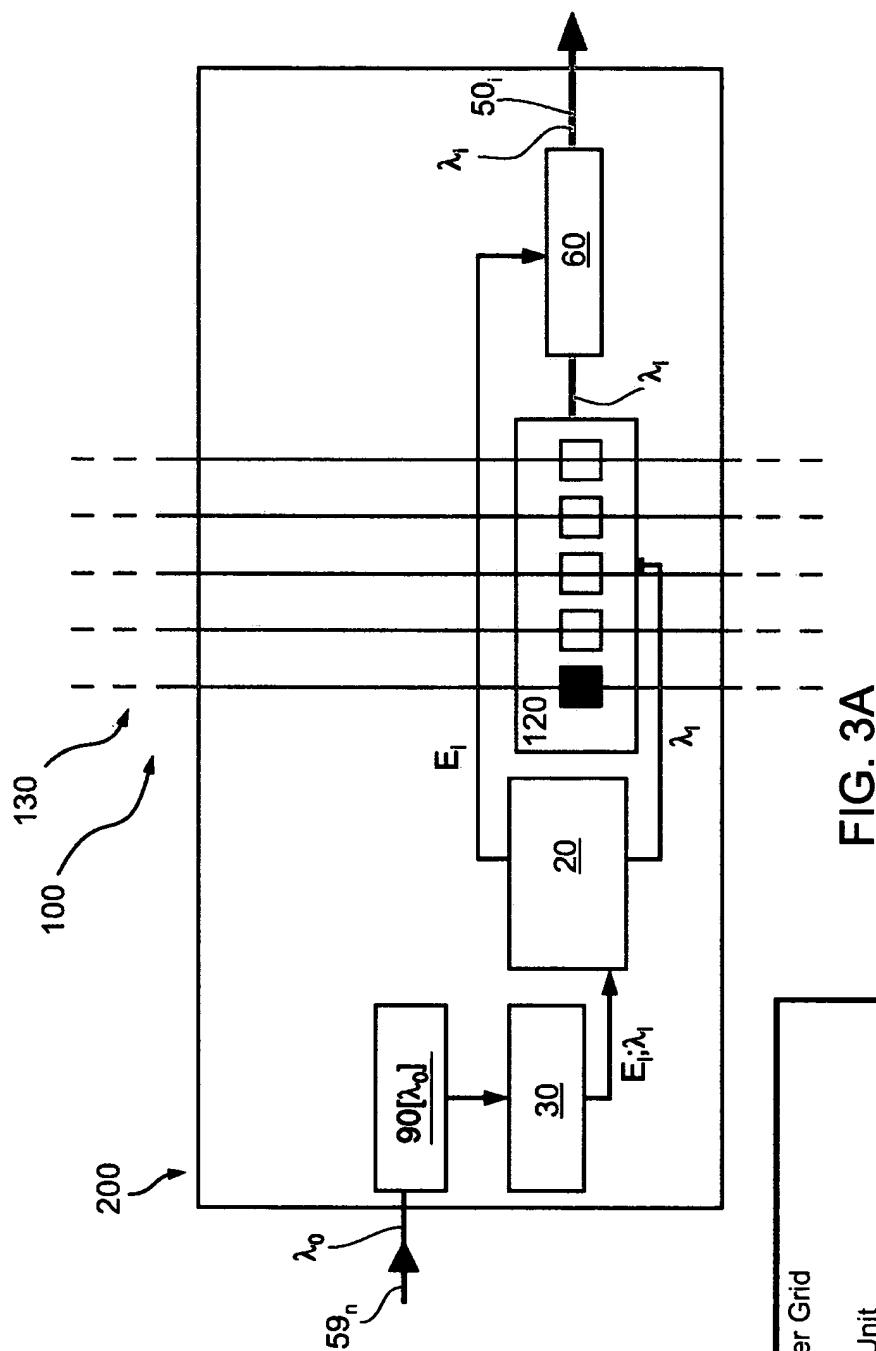


FIG. 2H



**FIG. 3A**

## 100 Laser Power Grid

## 20 Transmitter

### 30 Processing Unit

## 50 Data Packet

59 Received Data

### 90 Wavelength Addressed Receiver

## 120 Optical Switch Array

120 Optical Switch  
130 Optical Fiber

200 Processing Element (PE)

## 200 Processing Element (PE)

## Wavelength Designation



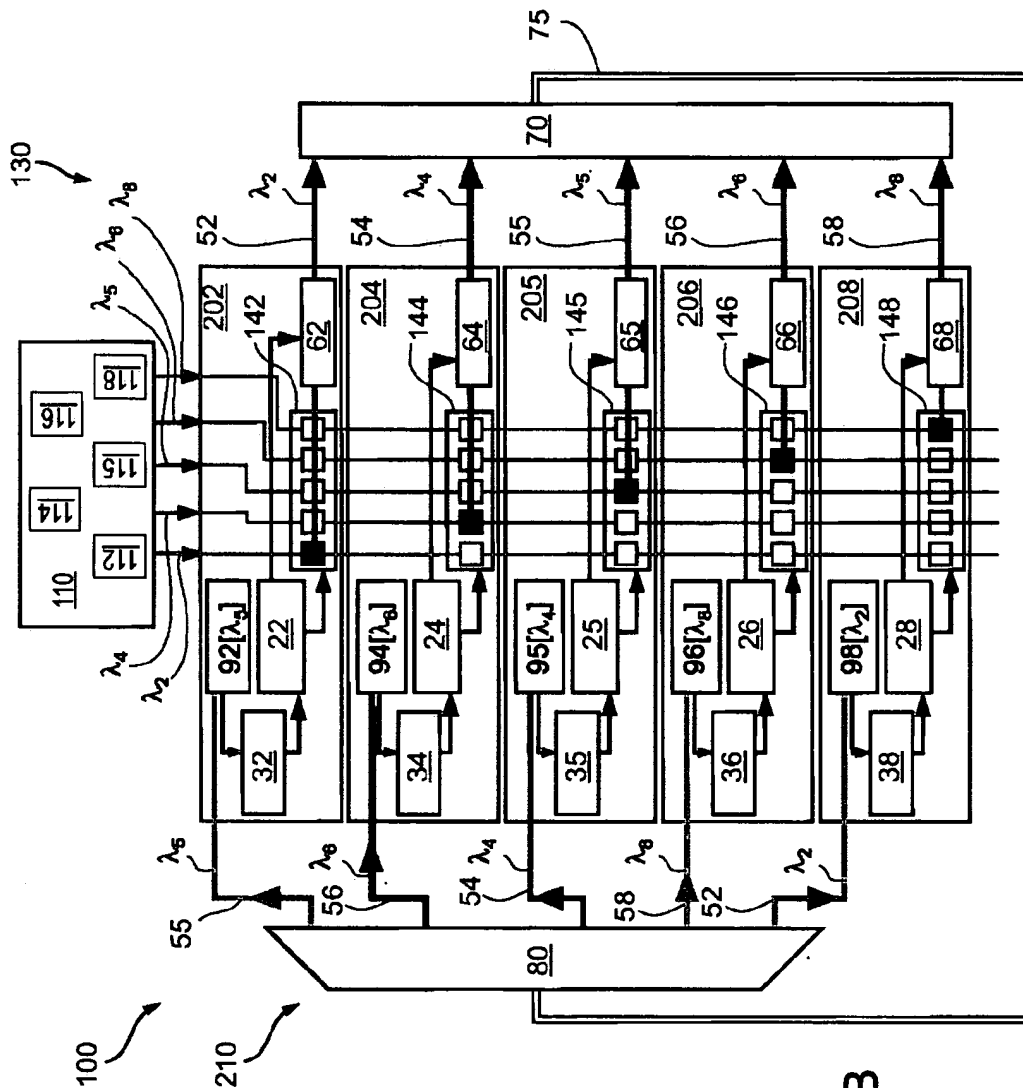
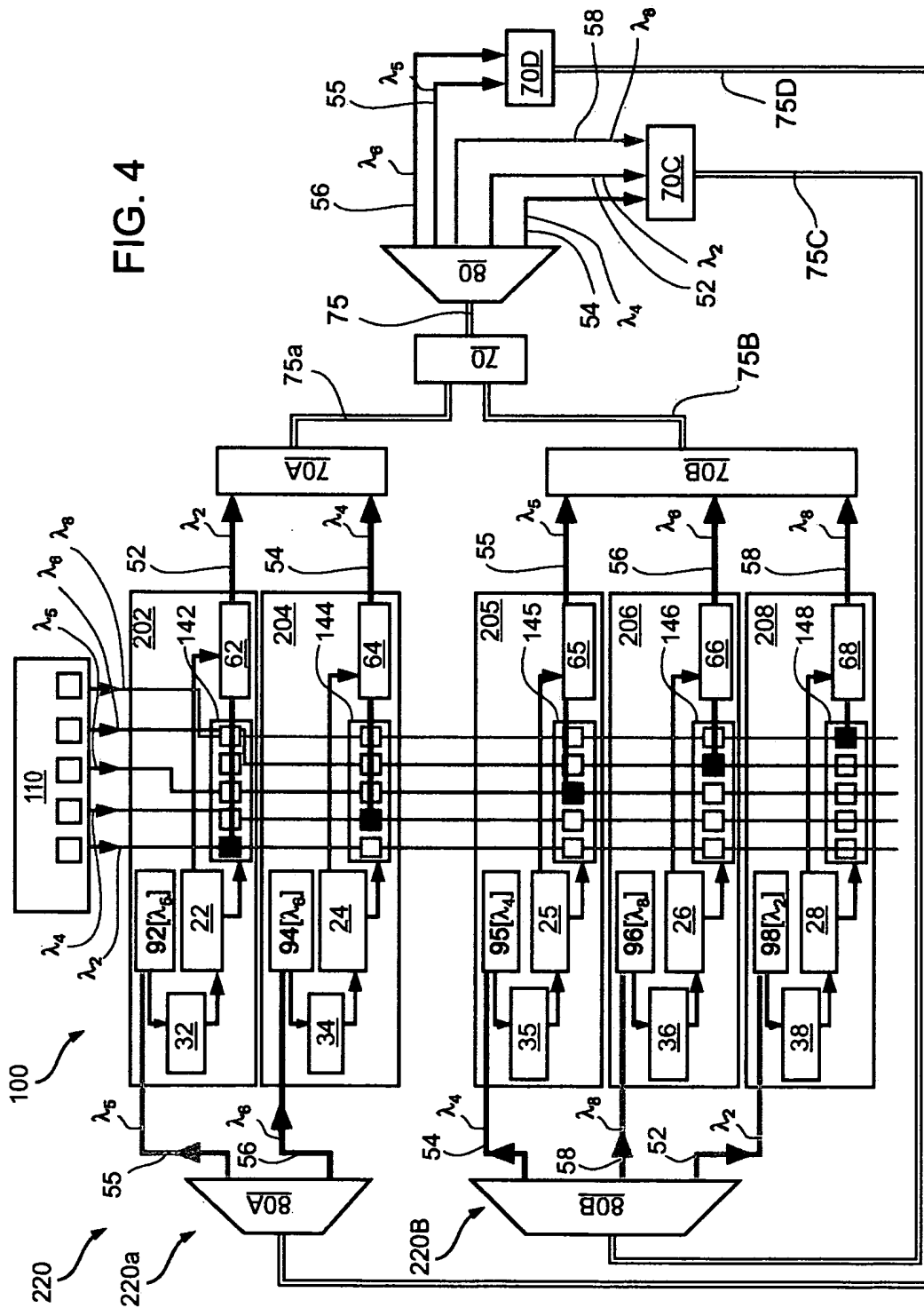


FIG. 3B

22, 24, 25, 26, 28 Transmitters	100 Laser Power Grid
32, 34, 35, 36, 38 Processing Units	110 Laser Power Supply Station
52, 54, 55, 56, 58 Data Packets	112, 114, 115, 116, 118 CW Laser Sources
62, 64, 65, 66, 68 Modulators	130 Laser Distribution Grid
70 Optical Coupler	142, 144, 145, 146, 148 Optical Switch Arrays
75 Optical Fiber	202, 204, 205, 206, 208 Processing Elements
80 Optical Wavelength Demultiplexer	210 Data Network
92, 94, 95, 96, 98 Wavelength Addressed Receivers	λ Wavelength Designation

FIG. 4



22, 24, 25, 26, 28 Transmitters	110 Laser Power Supply Station
32, 34, 35, 36, 38 Processing Units	112, 114, 115, 116, 118 CW Laser Sources
52, 54, 55, 56, 58 Data Packets	130 Laser Distribution Grid
62, 64, 65, 66, 68 Modulators	142, 144, 145, 146, 148 Optical Switch Arrays
70, 70A, 70B, 70C, 70D Optical Coupler	202, 204, 205, 206, 208 Processing Elements
75, 75A, 75B, 75C, 75D Optical Fibers	220 Data Network
80, 80A, 80B Optical Wavelength Demultiplexers	220A, 220B Preferred Locations
92, 94, 95, 96, 98 Wavelength Addressed Receivers	λ Wavelength Designation
100 Laser Power Grid	

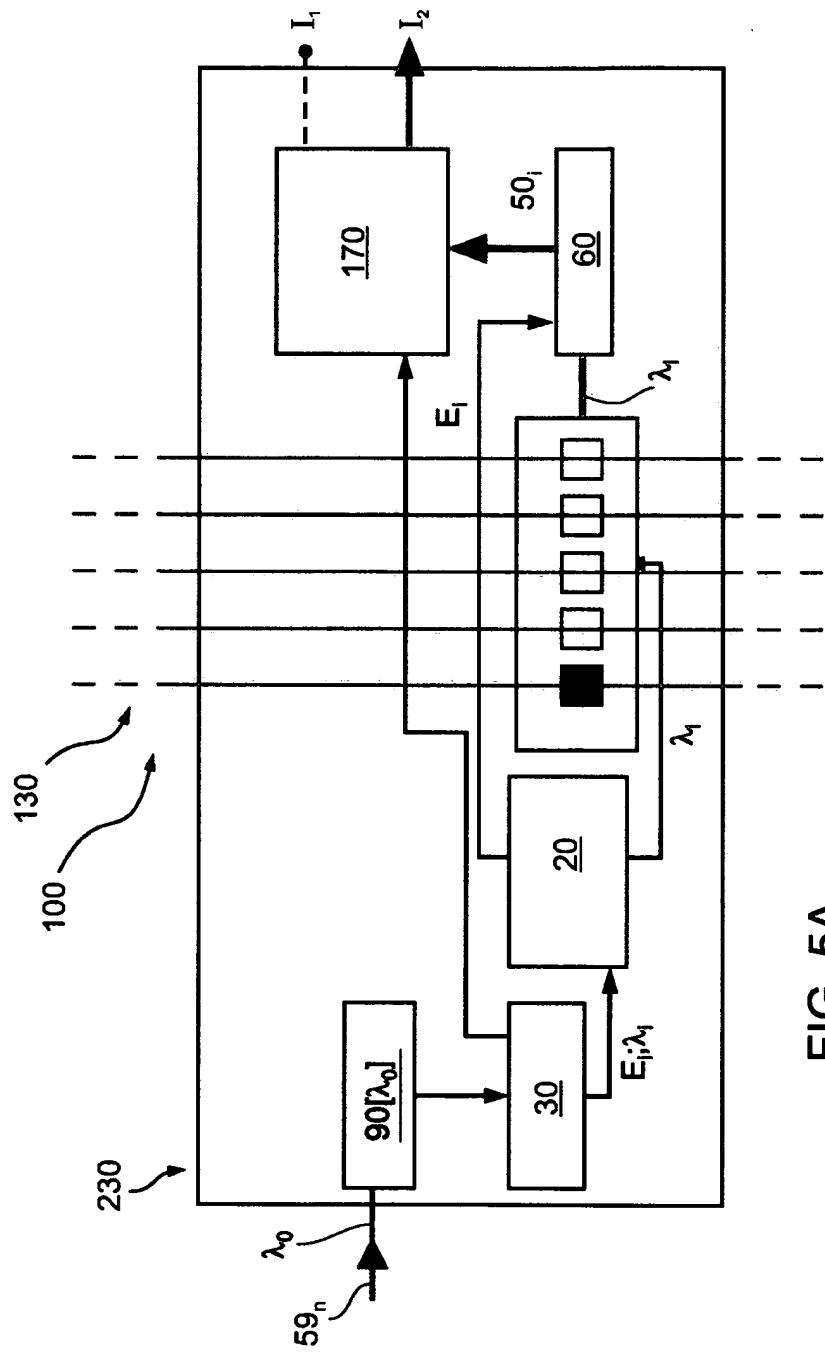


FIG. 5A

20 Transmitter	130 Laser Distribution Grid
30 Processing Unit	170 Cluster Router
50 Data Packet	230 Processing Element
59 Received Data	E Electronic Data to be Transmitted
60 Modulator	I Destination Cluster
90 Wavelength Addressed Receiver	$\lambda$ Wavelength Designation
100 Laser Power Grid	

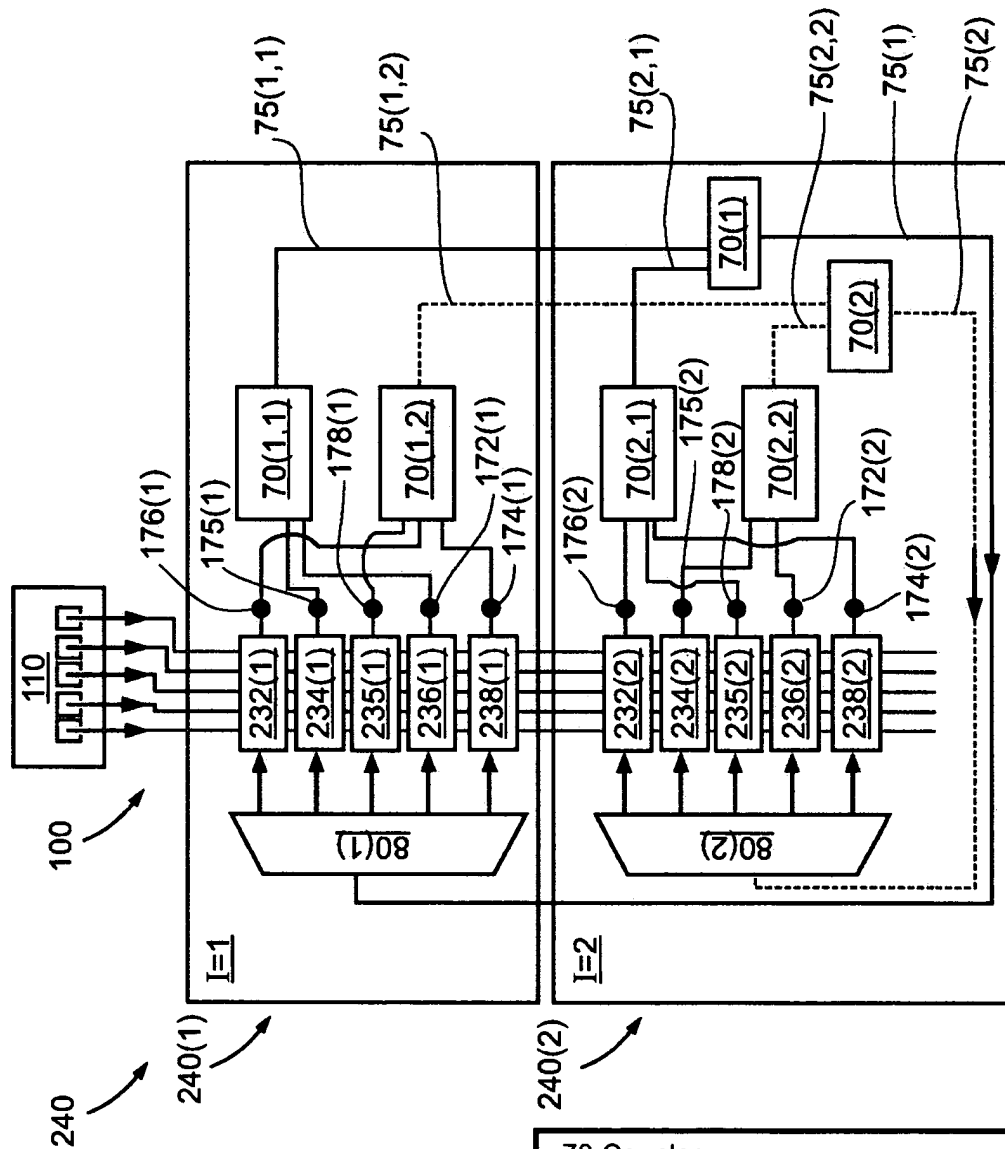


FIG. 5B

- 70 Coupler
- 75 Optical Fiber
- 100 Laser Power Grid
- 110 Laser Power Supply
- 172, 174, 175, 176, 178 Data Packets
- 232, 234, 235, 236, 238 Processing Elements
- 240, 240(1), 240(2) Clusters
- I Cluster ID